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REMARKS

Applicants have amended claim 2 to claim a composition that is invisible when applied to a pastry substrate. Applicants believe support for this amendment can be found at least at pages 9-10 in paragraphs [0031]-[0032] of the originally filed specification.

In the Office Action mailed October 20, 2006, the Examiner maintained her prior rejection of claim 1 under 35 U.S.C. §102(b) as being clearly anticipated by U. S. Patent No. 4,504,502 to Earle et al. from the Office Action mailed January 26, 2006. In the Office Action mailed January 26, 2006, the Examiner asserted that the '502 patent "discloses of [sic] a composition comprising a pastry product at least partially coated with a film (i.e. a substantially clear coating composition) comprising a starch component wherein the composition provides at least a partial moisture barrier on the pastry product."

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP 2131. Moreover, in proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of anticipation based upon the prior art. *In re Sun*, 31 USPQ 2d 1451, 1453 (Fed. Cir. 1993) (unpublished). Applicants respectfully assert that the Examiner has not yet met her burden of establishing a *prima facie* case of anticipation with respect to the rejected claims. Applicants respectfully submit that the Examiner has not shown that Earle et al. disclose a "substantially clear coating composition," which is one of the elements in claim 1. The Examiner's statement that the substrate is "at least partially coated with a film" does not mean that the "film" of the '502 patent is "substantially clear." Accordingly, Applicants respectfully submit that the Examiner has not met her burden of establishing a *prima facie* case of anticipation with respect to rejected claim 1.

Not only has the Examiner not met her burden of establishing a *prima facie* case of anticipation, but even if she has, Applicants have rebutted any *prima facie* case if it has been established. Applicants respectfully submit that the coating composition disclosed in Earle et al. is not a "substantially clear coating composition." (Decl. of Cheree L. B. Stevens ¶ 6). Applicants respectfully submit that the Examiner has not referenced any evidence, teaching, or

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suggestion from Earle et al. that teaches a "substantially clear coating composition." Earle et al. essentially disclose a two-stage process to form a film on a food product. (Decl. of Cheree L. B. Stevens ¶ 6). The first stage as discussed in column 4 is to apply an algin solution that may contain an edible filler and/or carrier material. (Decl. of Cheree L. B. Stevens ¶ 6). Algin is a hydrocolloid compound that will not form a film without the addition of calcium. (Decl. of Cheree L. B. Stevens ¶ 6 and Exhibit 1, <http://www.ispcorp.com/products/food/content/brochure/alginate/reaction.html>). In fact, this is further evidenced by the '502 patent itself, which requires a gelling agent to be added. (Decl. of Cheree L. B. Stevens ¶ 6). The specific gelling agents listed are, in fact, calcium ion containing compounds, in particular calcium chloride and calcium lactate. (See '502 patent, column 4 lines 42-45; Decl. of Cheree L. B. Stevens ¶ 6). Both calcium chloride and calcium lactate when mixed with water are cloudy. (Decl. of Cheree L. B. Stevens ¶ 6). These calcium compounds also have very low solubility. (Decl. of Cheree L. B. Stevens ¶ 6).

Additionally, Earle et al., at column 4 line 16, disclose using an "edible filler," which will further impede the solubility of the calcium ion compounds. (Decl. of Cheree L. B. Stevens ¶ 7). Furthermore, because the calcium components are applied as a component of a dry gelling mixture (see '502 patent, column 4 lines 46-48), they will be even less likely to dissolve and will be visible in the final coating. (Decl. of Cheree L. B. Stevens ¶ 7). Accordingly, for at least the above reasons, the calcium components of the '502 patent, which are necessary to form a film, will make the film visible on the food substrate. (Decl. of Cheree L. B. Stevens ¶ 7).

In response to Applicants' previously submitted arguments, the Examiner stated that Applicants' argument was unpersuasive since the filler and/or carrier material are not required, but are merely optional ingredients in the Earle et al. composition. However, as previously stated, Applicants argued that the cloudiness of the Earle et al. composition occurs because of the mixture of the alginate solution and the gelling agent, namely calcium ion containing compounds, and not only because of the filler and/or carrier material. Since the gelling agent is required for the Earle et al. composition to form a film on a substrate, Applicants respectfully submit that the Earle et al. patent does not disclose a "substantially clear coating composition."

In response to Applicants' previously submitted arguments, the Examiner stated that

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Applicants' argument was unpersuasive since the "cloudy" composition disclosed in the Earle et al. patent does not mean "entirely unclear," and therefore the Earle et al. composition could be "substantially clear." Applicants respectfully assert that a cloudy composition is not a "substantially clear coating composition." The Examiner also stated that Earle et al. disclose a "substantially clear coating composition" since Earle et al. disclose that there is no difference in the appearance of the product when the Earle et al. food coating is applied to the product (Earle et al. at col. 5, lines 11-13). Applicants respectfully assert that the section that the Examiner references does not disclose a "substantially clear coating composition." A careful reading of the surrounding text cited by the Examiner shows that the reason that the film and the product have the same appearance is because the film and the product are made of related materials (*i.e.* corn meal and corn tortillas), and not because the film is "substantially clear." (Earle et al. at col. 5 lines 5-16). Quite the opposite, the carrier materials mixed with the dry particulate calcium chloride, the gelling agent according to the '502 patent, are stated as "related directly to the material used to form the dough in the first instance." As such, the cited passage of the '502 patent at col. 5 expresses a desire that the coating look like and mimic the base substrate, but not that the film is "substantially clear." Accordingly, Applicants respectfully submit that the Earle et al. patent does not disclose a "substantially clear coating composition," and for at least the foregoing reasons, Applicants respectfully request the Examiner withdraw this rejection.

In the Office Action mailed October 20, 2006, the Examiner continued to maintain her prior rejection of claims 1, 3-7, 11, 14, 17, 18, and 22 under 35 U.S.C. §103(a) as being unpatentable over U. S. Patent No. 3,723,132 to Hodge and in view of WO 94/21143 to Baur et al. In the Office Action mailed January 26, 2006, the Examiner asserted that:

It would have been obvious to one skilled in the art at the time the invention was made to have had about 50% water mixed with a composition consisting of 5-50% wheat flour, 5-50% modified corn starch, about 2-20% dextrin, about 0.1-3.5% sodium acid pyrophosphate, and optional flavorings to form a clear texture preserving coating to be applied to a pastry at about 55F as recited in claims 1, 3-7, 11, 14, 17, 18, and 22 in view of Baur on the texture preserved fried pastry product as disclosed by Hodge.

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In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. *In re Fritch*, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992); MPEP §2142. Applicants respectfully assert that the Examiner has not yet met her burden of establishing a *prima facie* case of obviousness with respect to the rejected claims. Consequently, the Examiner's rejection of the subject claims is inappropriate and should be withdrawn. Under MPEP §2142, in order to establish a *prima facie* case of obviousness, the Examiner must provide: (1) some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings, (2) a reasonable expectation of success, and (3) the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Applicants respectfully assert that the pending claims would not have been obvious in view of the combined references for various reasons. First, Applicants respectfully submit that the references do not include a suggestion or motivation to combine their teachings to obtain the claimed invention. Hodge teaches to retard the staling of a fried pastry product by integrating two additional ingredients, specifically waxy corn starch and sodium stearyl-2-lactylate, into the actual product. Applicants respectfully submit that, if anything, Hodge teaches one to integrate ingredients into the substrate rather than apply them to the outside surface of the substrate.

Second, Baur et al. do not specifically disclose that the glaze can be applied to a pastry product. Moreover, even if one having ordinary skill in the art had attempted to apply the Hodge coating to the pastry product disclosed in Hodge, the coating would not successfully adhere. A review of the specification of Baur et al. show that wheat flour is included as the first essential component of the glaze composition.¹ As stated in the Declaration of John Stevens filed along with Applicants' July 26, 2006, Response, the wheat flour component of the composition prevents the successful adherence of the coating to a wheat-based dough

¹The Baur et al. reference discloses wheat flour as the first component of the composition. (Baur, p. 2, lines 27-28). The next paragraph states that a combination of modified starch is the "next essential component." (Baur, p. 3, lines 1-4). It logically follows that wheat flour is the first essential component of the composition since the modified starch combination is disclosed as the "next essential component" and the wheat flour is the only

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substrate, such as a pastry product, (Decl. of John Stevens, ¶ 9). Wheat flour-containing coatings, such as those described in Baur et al., may form a substantially clear coating on a french fry, but do not necessarily do so on other substrates. In fact, wheat flour-containing coatings, when applied to a wheat-based dough substrate, create a flaky, raised, and visible coating, *i.e.* not a substantially clear coating. (Decl. of John Stevens, ¶ 10).

Furthermore, Applicants respectfully submit that Baur et al. teach away from the presently claimed products and certainly teaches one of ordinary skill away from the removal of wheat flour as a component of the glaze since, as discussed above, it unequivocally discloses that the wheat flour is essential to the composition.

In the Office Action mailed October 20, 2006, the Examiner stated that Applicants' argument, namely that the combination of Hodge and Baur et al. would not produce the claimed invention since a coating composition containing wheat flour would not successfully adhere to a wheat-based substrate, was unpersuasive. Specifically, the Examiner asserted that Applicants' argument was not convincing since it was not clear to the Examiner whether a wheat-based substrate is required in the claims. Applicants assert that it is clear from the originally filed specification that pastries are inherently wheat-based. However, to further prosecution of this case, Applicants have amended claim 1 to expressly state that the pastry substrate comprises wheat flour. Applicants respectfully assert that support for this amendment can be found at least on page 1 in [0003] and page 3 in [0011]. Accordingly, for at least the aforementioned reasons, there would not have been a motivation to combine the Baur et al. coating to the Hodge pastry product to obtain the claimed invention and, even if combined, the combination will not yield the presently claimed invention. Applicants respectfully apply these same arguments to all of the Examiner's rejections regarding the combinations based upon Hodge and Baur et al.

In the Office Action mailed October 20, 2006, the Examiner also maintained her rejection of claims 2, 8, 9, and 19 under 35 U.S.C. §103(a) as being unpatentable over Hodge and in view of Baur et al. as applied to claims 1, 3-7, 11, 14, 17, 18, and 22 above and in view of LrdRas (<http://www.florilegium.org/files/FOOD-BREADS/flour-msg.html>) from the previous Office Action.

component listed before the starch.

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Applicants could not find any teaching in LrdRas regarding the substitution of modified starches. Even assuming that the Examiner's comments regarding the equivalence of wheat starch and corn starch were true, which Applicants do not agree with, the Examiner has not shown why LrdRas would teach one having ordinary skill in the art to substitute modified corn starch for modified wheat starch.

In the Office Action mailed October 20, 2006, the Examiner rejected Applicants' assertion that wheat starch and modified cornstarch would not have been known equivalents. The Examiner referenced Applicants' co-pending application, 10/682,673, to prove that modified cornstarch may be substituted for modified wheat starch. At the outset, Applicants submit that co-pending application 10/682,673 is not prior art to this application.

Additionally, the "reference" (LrdRas) currently being used by the Examiner apparently to establish the fact that corn starch may be universally substituted for wheat starch states:

A side thought on the 'cornflour' discussion. I went to Fresh Life after work today and bought both cornstarch and cornflour. Cornflour is as fine as regular flour but yellower. Cornstarch is silky and definitely white. It is apparent to me at least that cornstarch and cornflour are the maize equivalents of wheat starch and wheat flour. They are definitely [sic] 2 [sic] very different products. Sunday I will be experimenting with both to observe just what differences their [sic] are in the cooking arena.

In fact, the cited blog states that "they are definitely [sic] 2 [sic] very different products" and that the author planned to experiment with them to determine the differences in the cooking arena. Moreover, whether one may substitute one coating starch component for another can depend upon numerous factors in the unpredictable art of food coatings including, but not limited to, the substrate being coated, the other ingredients of the coating, and whether or not a visible or substantially clear coating is desired. As such, just because two starches may be used in one instance does not mean the same starches can be used interchangeably in all or perhaps even most instances.

Applicants respectfully assert that LrdRas does not provide reliable information as to what would have been obvious to one having ordinary skill in the art at the time of the

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application filing date. Applicants have found more reliable references that rebut the alleged teachings of LrdRas, which demonstrate the different properties of corn starch and wheat starch. For example, Exhibit 2, <http://food.oregonstate.edu/starch/lecture.html> (Starch Gelatinization Website) demonstrates the different rates of heating of the two starches (*i.e.* wheat starch heats faster than corn starch) and the differences in viscosity (*i.e.* wheat starch/water dispersions are less viscous than those same dispersions made with corn starch). At least these different properties of the wheat starch and corn starch demonstrates that they would react differently in different chemical compositions and/or would therefore not be "known equivalents."

Furthermore, the fact that wheat starch dispersions are less viscous than those made with corn starch teaches away from utilizing wheat starch as a corn starch substitute since the decreased viscosity of the wheat starch would provide a less sticky coating, and therefore be less adherent, than the same coating containing corn starch. Applicants also assert that the Starch Gelatinization Website, as opposed to LrdRas, is a reference which is more likely to indicate the knowledge of those having skill in the art. The Starch Gelatinization Website is a scholarly article whereas the LrdRas is not from a scholarly source and there is no proof that its author has any skill in the art.

In the Office Action mailed October 20, 2006, the Examiner stated that Applicants' argument that there is no proof that the LrdRas supports knowledge of one having ordinary skill in the art. The Examiner stated that LrdRas supports knowledge taught by experimental results. The passage from the LrdRas reference states:

A side thought on the 'cornflour' discussion. I went to Fresh Life after work today and bought both cornstarch and cornflour. Cornflour is as fine as regular flour but yellower. Cornstarch is silky and definitely white. It is apparent to me at least that cornstarch and cornflour are the maize equivalents of wheat starch and wheat flour. They are definitely [sic] 2 [sic] very different products. Sunday I will be experimenting with both to observe just what differences their [sic] are in the cooking arena.

(*Emphasis added*). The person who made this entry is stating that he/she would begin experimenting to observe the differences in these products on Sunday, indicating that

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experimental results had not yet been conducted. Moreover, Applicants have been unable to find a follow-up entry by this same person reporting the results from their alleged "experiments" on Sunday. Accordingly, Applicants respectfully submit that this entry does not represent experimental results.

In the Office Action mailed October 20, 2006, the Examiner continued to reject claim 16 under U.S.C. §103(a) as being unpatentable over Hodge in view of Baur et al. and in view of LrdRas and in view of U.S. Pat. No. 5,976,607 to Higgins et al. The Examiner stated that "Higgins teaches that a starch and dextrin containing coating should be applied to the substrate in the amount of 20-90%," which the Examiner interpreted as making it obvious "to include 20-90% pick up on the edible substrate in view of Higgins."

Applicants assert that the Examiner has incorrectly interpreted the disclosure of Higgins et al. since Higgins et al. do not disclose that 20-90% of the coating would be picked-up on the substrate. Instead, Higgins et al. state that the coating composition is present in a level of 20 to 90 weight percent in an aqueous medium, of which the total dispersion (containing both the coating composition and the aqueous medium) is subsequently applied to a substrate. The Examiner does not cite to any portion of Higgins et al. which discloses the amount of pick-up that actually remains on the substrate. Accordingly, Applicants respectfully submit that the Examiner has not shown that each limitation is taught or suggested in the combined references, as required by MPEP § 2142. And even if the Examiner has established a *prima facie* case of obviousness, Applicants further assert that claim 16 is not obvious in view of these references for the same reasons discussed above regarding the other three references of this rejection that form the Examiner's basis for the rejection of claim 16. Applicants also reassert these arguments for all other rejections based on Higgins et al.

In the Office Action mailed October 20, 2006, the Examiner stated that Applicants' arguments regarding the failure of Higgins et al. to disclose the amount of slurry pick-up was unpersuasive. The Examiner stated that, since coating is applied through an aqueous waterfall and since, at best, the top and sides of the product would be coated, one would have expected up to about 75% of the product to be covered, thus coating the product in an amount of 0-67%. Applicants respectfully assert that the Examiner is purely speculating as to the amount of slurry

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pick-up on the coated product. The Examiner has not provided any prior art reference which teaches that coating in an aqueous waterfall would automatically result in a slurry pick-up of 0-67%. Accordingly, Applicants respectfully assert that Higgins et al. do not expressly teach the amount of slurry pick-up which remains on the substrate.

In the Office Action mailed October 20, 2006, the Examiner also continued to reject claims 7, 10, 15, 17, 20, and 23 under 35 U.S.C. §103(a) as being patentable over the following five references: Hodge in view of Baur et al. and in view of LrdRas and in view of Higgins et al. as in view of U.S. Pat. No. 5,439,697 to Gonzalez-Sanz. The Examiner stated that "it would have been obvious to...have modified the coating composition as disclosed by modifying Hodge to include a sweetener in view of Sanz" and also stated that "it would have been obvious...to have modified the coating composition as disclosed by Hodge to include a chemically or physically modified starch in view of Sanz."

Applicants respectfully submit the Examiner in this and all of the earlier obviousness rejections is using impermissible hindsight to combine the teachings of these references to produce the claimed invention. See MPEP §2142. The low-fat spreadable composition taught in the '697 patent is not a "substantially clear coating composition" as required by the pending claims. In fact, it is a frosting. Since the composition in the '697 patent is not "substantially clear," Applicants submit that there is no teaching or suggestion in the '697 patent as to which components of the spreadable composition would be suitable for a "substantially clear coating." Accordingly, Applicants respectfully assert these claims are not obvious in view of the fact that one having ordinary skill in the art would not have combined these references to obtain the pending claims. Applicants also reassert these arguments for all other rejections based on the '697 patent.

In the Office Action mailed October 20, 2006, the Examiner also continued to reject claims 12, 13, and 21 under 35 U.S.C. §103(a) as being patentable over the combination of the following six references: Hodge in view of Baur et al. and in view of LrdRas and in view of Higgins et al., and in view of the '697 patent as applied to the above-mentioned claims and in view of U.S. Patent No. 4,510,166 to Lenchin et al. The Examiner stated that "[i]t would have been obvious...to include any specific type and amount of dextrin at any solubility level in

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the invention as taught by Hodge and in view of Lenchin."

Applicants respectfully assert that the Examiner has used impermissible hindsight and has impermissibly decided to pick and choose from various references to obtain the claims of the pending application. "It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference barely suggests to one of ordinary skill in the art." *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986). Applicants respectfully assert that the Examiner has cited Lenchin for its disclosure of dextrin, but did not consider the reference as a whole. Lenchin does not disclose a "substantially clear coating composition," and instead, it specifically discloses water and converted starches that form gels, which are fat and/or oil replacements in various foodstuffs (including icings). Lenchin further states that the icing produced would be "creamy." The Examiner did not point to any teaching or suggestion in the reference that would indicate which type of dextrin at which type of solubility would be suitable in a substantially clear coating composition that would be suitable for use on the presently claimed pastry products. Accordingly, one having ordinary skill in the art would not have combined Lenchin with the other references cited by the Examiner in order to create the present invention. Moreover, there has been no showing of a motivation to combine any teaching in Lenchin with any of the other five references where the references support a reasonable expectation of success of this combination. Applicants also reassert these arguments for all other rejections based on Lenchin.

Finally, in the Office Action mailed October 20, 2006, the Examiner continued to assert the provisional rejection of various claims on the grounds of non-statutory obviousness-type double-patenting. Applicants respectfully traverse these rejections under MPEP §804 and will address them in a later Response since this rejection may be later withdrawn if this application issues before the cited applications.

The Applicants have made an effort to place the present application in condition for allowance, and a notice to this effect is earnestly solicited. In the event there are any remaining formalities or other issues needing Applicants' assistance, Applicants request the Examiner to call the undersigned attorney at (616) 949-9610.


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Respectfully submitted,

CHEREE L.B. STEVENS ET AL.

By: PRICE, HENEVELD, COOPER,
DEWITT & LITTON, LLP

March 20, 2007
Date



Todd A. Van Thomme, 44 285
695 Kenmoor, S.E.
Post Office Box 2567
Grand Rapids, Michigan 49501
(616) 949-9610

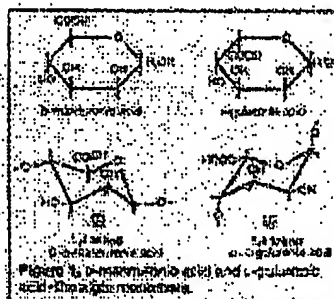
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EXHIBIT 1

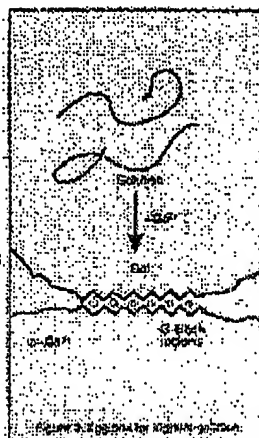
The Algin/Calcium Reaction

The term algin is used to describe alginic acid and its various inorganic salt forms, which are derived from brown seaweeds (*Phaeophyceae*). The monovalent salts, often referred to as alginates, are hydrophilic colloids and these, especially sodium alginate, are widely used in the food industry. In a great number of food applications, the now well-known reactivity of alginates with calcium ions is utilized. Although this reaction has been known for almost a century, its true potential as a structuring agent for food systems has not yet been fully realized. The purpose of this brochure is to highlight the "state of the art" in the application of the algin/calcium reaction in structured foods and, in so doing, provide a strong technical base from which new product opportunities can evolve. Since sodium alginate is the normal starting material for this reaction, the terms alginate and algin can be taken for the purposes of the discussion to be synonymous with sodium alginate.

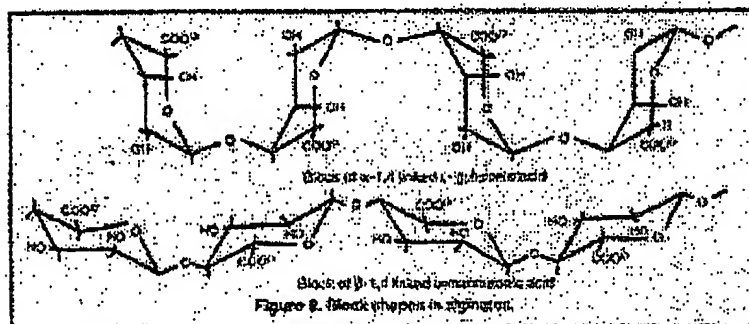
Alginate is a linear co-polymer composed of two monomeric units. D-mannuronic acid and L-guluronic acid. These monomers occur in the alginate molecule as regions made up exclusively of one unit or the other, referred to as M-blocks or G-blocks, or as regions in which the monomers approximate an alternating sequence. The calcium reactivity of alginates is a consequence of the particular molecular geometries of each of these regions. The shapes of the individual monomers are shown in Figure 1.



The D-mannuronic acid exists in the 1C conformation and in the alginate polymer is connected in the β -configuration through the 1- and 4- positions; the L-guluronic acid has the 1C conformation and is α -1, 4- linked in the polymer. Because of the particular shapes of the monomers and their modes of linkage in the polymer, the geometries of the G-block regions, M-block regions, and alternating regions are substantially different. Specifically, the G-blocks are buckled while the M-blocks have a shape referred to as an extended ribbon, as shown in Figure 2. If two G-block regions are aligned side by side, a diamond shaped hole results. This hole has dimensions that are ideal for the cooperative binding of calcium ions.



When calcium ions are added to a sodium alginate solution, such an alignment of the G-blocks occurs; and the calcium ions are bound between the two chains like eggs in an egg box, as shown in Figure 3. Thus the calcium reactivity of algin is the result of calcium-induced dimeric association of the G-block regions. Depending on the amount of calcium present in the system, these inter-chain associations can be either temporary or permanent. With low levels of calcium, temporary associations are obtained, giving rise to highly viscous, thixotropic solutions. At higher calcium levels, precipitation or gelation results from permanent associations of the chains. The structured foods discussed in this brochure utilize alginate gelation.



Commercial alginates are derived from a variety of weed sources. Since different weeds yield alginates that differ in monomeric composition and block structure, a given

alginate has its own characteristic calcium reactivity and gelation properties. Although the ratio of mannuronic acid to guluronic acid (M:G ratio) can be obtained relatively easily, the detailed molecular compositions of alginates in terms of block lengths and block distributions are much more difficult to determine. As a result, alginates are usually referred to as "high M" or "high G", depending on the proportions of mannuronic acid and guluronic acid they contain. Most commercial products are of the high M type, the best example being the alginate obtained from giant kelp, *Macrocystis pyrifera*, which we harvest off the California coast. *Laminaria hyperborea* provides a high G alginate and is utilized by our alginate manufacturing plants in Scotland. In general terms, high G alginates produce strong, brittle gels that are heat stable, while high M alginates provide weaker, more elastic gels that have less heat stability but more freeze/thaw stability. Final gel strength, however, can be adjusted by manipulation of the gel chemistry and in some product situations, high G and high M alginates are interchangeable.

In practice, alginate gels are obtained using three major methods; namely, diffusion setting, internal setting, or setting by cooling.

Diffusion Setting:

Diffusion setting is the simplest technique and, as the term implies, the gel is set by allowing calcium ions to diffuse into an alginate solution. Since the diffusion process is slow, this approach can only be effectively utilized to set thin strips of material (e.g., pimiento strips, films, coatings, etc.), or to provide a thin gelled coating on the surface of a food product such as an onion ring. The diffusion rate can be increased by increasing the calcium concentration in the setting bath. This has limitations, however, since calcium chloride, the most common source of calcium ions for diffusion, imparts an unpleasant taste to foods when used at high levels. Also, calcium lactate, another setting agent, has a relatively low solubility (ca. 5 percent by wt.) in water.

Internal Setting:

In internal or bulk setting, which is normally carried out at room temperature, the calcium is released under controlled conditions from within the system. Although the detailed reaction kinetics are extremely complex, involving both high molecular weight polymers and small organic and inorganic molecules, a qualitative understanding of the reaction, sufficient for practical purposes, has been acquired. This has led to the development of structured fruits, structured pet foods, and a host of cold prepared desserts. Calcium sulfate (usually as the dihydrate), gypsum, and dicalcium phosphate (calcium hydrogen orthophosphate) are the sources of calcium most commonly used. The rate at which the calcium is made available to the alginate molecules depends primarily on pH and the amount, particle size and intrinsic solubility characteristics of the calcium salt. Small particle size and low pH favor rapid release of calcium.

In most situations, calcium release during the mixing of the ingredients is so rapid that a calcium sequestrant is required to control the reaction by competing with the alginate for calcium ions. Typical food-approved sequestrants are sodium hexametaphosphate, tetrasodium pyrophosphate, and sodium citrate. Although disodium phosphate (disodium hydrogen orthophosphate) has little affinity for calcium at pH less than 5, it is sometimes usefully employed in the preparation of alginate gels to remove (as insoluble dicalcium phosphate) calcium ions from tap water. Removal of these ions permits more efficient hydration and subsequent gelation of the alginate.

For a given level of alginate and calcium salt, an increase in the level of sequestrant causes a decrease in the setting rate of the gel. This results in a progressively weaker final gel, since the ultimate distribution of the calcium ions between the alginate and the sequestrant increasingly favors the latter. In other words, the so-called conversion of the sodium alginate into the gelled calcium form is progressively reduced. Control of the gelling reaction with sequestrants is only necessary during mixing to prevent premature gelation and irreversible breakdown of the gel structure. Obviously, with highly efficient and rapid-mixing equipment only a relatively small amount of sequestrant is required because only a small proportion of the calcium salt has the opportunity to dissolve during the mixing process. In these situations, extremely fast setting, strong gels are obtained.

Setting by Cooling:

The third method of preparing alginate gels involves dissolving the gelling ingredients, alginate, calcium salt, acid, and sequestrant in hot water and allowing the solution to set by cooling. Unlike gelatin gels, these alginate gels are not thermo-reversible and can be used as desserts in countries where the ambient temperature is sufficiently high to melt gelatin gels. The calcium salts and sequestrants used in this system are the same as those already mentioned for internal setting. Although the calcium ions required for the setting reaction are already in solution with the alginate, setting does not occur at elevated temperatures because the alginate chains have too much thermal energy to permit alignment. It is only when the solution is cooled that calcium-induced inter chain associations can occur.

An interesting feature of this type of gel is its stability - syneresis or water loss from the network is minimal. This stability is due to the fact that the calcium required for gel formation is available in solution to all of the alginate molecules at the same time, allowing the formation of a thermodynamically stable network.

In contrast, in diffusion setting the algin molecules closest to the calcium ions in the setting bath react first, and in internal setting the molecules closest to the macroscopic particles of dissolving calcium salt react first. In other words, in these two systems, the molecules do not have the opportunity to align all at the same time, and the resulting gel networks have a certain amount of built-in instability. This instability gives rise to some gel shrinkage and syneresis. In certain product situations, steps must be taken to ensure that shrinkage and syneresis are maintained at an acceptable level.

The above discussion covers the basic principles of the algin/calcium reaction. The following sections illustrate the practical applications of this reaction.

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EXHIBIT 2

Starch Gelatinization

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Factors Affecting Starch Paste and Gel Strength

Starch is an important constituent in many foods. It plays an obvious role in achieving the desired viscosity in such products as cornstarch pudding, sauces, pie fillings and gravies. It plays a more subtle role in potatoes, cereals, and baked products such as biscuits, muffins, popovers, pastry, cake and bread. Because of the importance of this food constituent, it is important to understand more about it. Starch occurs in the leucoplasts of tubers, leaves, seeds and other portions of the plant. Scanning electron micrographs (SEM) shows leucoplasts in a typical cell.

Further chemical and microphotography techniques has elucidated that starch is composed of two polymers - amylose and amylopectin. Scanning electron micrographs representing aggregates of these two polymers. Because of SEM limitations, SEM likely does not represent the actual individual glucose polymers; but rather, are probably conjugated macropolymers with a considerable amount of intermolecular bonding.

Amylopectin is the branched chained glucose polymer containing both alpha - 1, 4- linear and alpha - 1, 6-branched linkages. At one time, we used to say that this branched bushy polymer with branches 20 to 30 glucose residues long, contributes primarily to the viscosity of a prepared food. This was contrasted to the gelling contribution of the alpha - 1, 4 linked linear polymer - amylose. Amylose is approximately one-fourth the size of amylopectin; however, the glucose residues are 400 to 4000 units long. The attributing of viscosity to amylopectin and gelling to amylose may not be entirely valid.

The many different starches range in amylose, on the average, from 16 to 25% and maybe as high as 30%. You know there are some high amylose rice starch which may have as much as 80 to 90% amylose. These starches are unusual and are occasionally used in edible casings. At the other end of the scale, there are the waxy corn starches, waxy rice starches, and although not listed in the table, waxy sorghum, which contains 100% amylopectin and no amylose.

The amount of amylose may be defined in terms of iodine affinity. Measuring the amount of iodine in terms of iodine absorption by the amylose helix is a traditional approach. Amylose will form a complex with iodine turning a bluish color, amylopectin will not turn blue but rather a dispersion will maintain a reddish-brown color. In an institutional food service situation, this difference could be used to check out the possibility of added cereals to ground meat. There are other approaches to starch content and composition - for example, solubility or enzymatic techniques.

During the plants development photosynthesis takes place in the chloroplasts. From the transient starch synthesized in the chloroplasts, the starch is stored in the amyloplasts in the form of granules. These granules are generally either small and spherical or large and ellipsoidal. Within the granules the starch polymers are layered down in an organized manner. The manner of granule development varies for the different starch sources. It is possible to show the shape of at least four starch granules. The round spherical, somewhat angular corn starch granules can be seen. The variation in shape may be due to packing of the granules in the endosperm during development. Arrow root starch granules are somewhat ellipsoid in shape. The distinctive nature of each variety of starch can be seen. These are among the smaller granules of starch. The granules appear polygonal and are in clusters. Possibly because of the small granule size, separation of the starch during processing may have been difficult and inadequately done. Waxy maize starch granules have a greater variation than the corn starch. Additionally, there is some observable graininess.

Not all starch occurs in purified form for use in foods. Wheat starch granules appear to be



two sizes, a large lenticular shaped granule and small spherical granules with intermediary sizes. Although surfaces are relatively smooth, the granules show depressions, possibly due to either packing in the endosperm or extraction during processing, non-spherical or lenticular portions in the wheat flour may be flour protein.

In order to withstand modern processing and storage conditions, native starches are chemically or physically modified to change their properties. Modification is usually done to develop characteristics for specialized purposes by mild degradation, crosslinking of chains, derivatizing with phosphate or other esters or pregelatinization of the starch. Purity W has been modified by cross-linking waxy maize. This has increased its cold temperature stability, making it particularly useful for frozen products. The appearance of this modified starch, Purity W, is not greatly dissimilar from the native waxy maize. A difference was noted at higher magnifications. A greater number of pinholes were noted in the modified Purity W, possibly a result of the process or refining to obtain a whiter product. The Nesco gel starch is a wheat starch which has been pregelatinized to permit usage at lower heating temperature than usual with nongelatinized wheat starch. This pregelatinized wheat starch shows considerable deformation. On closer examination at a higher magnification, these granules appear to be collapsed with some sticking of the granules to each other.

The raw corn starch is frequently analyzed raw or as to the degree of change within the granule when heated in a starch-water dispersion.

A pictorial representation of the effect of heat at 8 endpoint temperatures on a basic five percent starch-water system indicates how changes may be seen by photomicrographic techniques. A five percent dispersion of starch approximates the concentration typical for some starch-containing gravies, pudding, soups and other entrees.

Summarizing the changes in the granule structure starting at 30C in the upper left hand corner and moving to 50C in the upper right hand corner. The represented end point moves downward from left to right at 60, 65, 70, 75, 80 and 85C. As shown, the granule progressively loses its integrity as the endpoint temperature increases. At 80c, there is a slightly noticeable change in the granule appearance. There is some dimpling and a few doughnut-shaped granules. As might be expected from viscosity increase and loss of birefringence this is more pronounced at 85C. At 75 and 80C there appeared to be collapse and deformation. At 85C considerable fragmentation and loss of granule integrity occurred.

In word form, this link summarizes some changes occurring within the starch granule. Of course, these changes likely occur at different temperatures for different starch sources.

In greater detail, in looking at corn starch-water starch dispersions during heating we find that from 30 to 50C there is essentially no change in the appearance of the granules. In this range, the granules are still held together by inter- and intra-molecular hydrogen bonding within and between the amylose and amylopectin. Although few changes are observable, with temperature increase hydrogen bonds are weakened and absorption of water within the granule is facilitated. Between 50 and 65C there is a slight to noticeable change in granule appearance. There is some dimpling and a few doughnut-shaped granules. At 70C the Gelatinization process may be extensive. At 75 and 80C there appears to be the collapse, deformation and loss of granule definition.

These changes not only differ with starch source but may differ with various temperature - time combinations. There is a range of heating temperatures at which food starch granules begin to lose their organized structure.

This slide shows micrographs of wheat starch - water dispersion at 30, 55, 80 and 85C moving from the upper left hand corner to upper right hand corner. As expected, the granules swell at a lower temperature than did the cornstarch. The observable changes begin to occur at 40 to 50C. At 55C, gelatinization of starch is visualized as a swollen granule with considerable exudate on the exterior. Contrary to the historical view of amylopectin being responsible for viscosity and amylose for gel strength, Miller et al. (Miller, B.S., Derby, R.I. and Trimbo, H.B. 1973. A pictorial explanation for the increase in

viscosity of a heated wheat starch-water suspension. Cereal Chemistry 50:271) observed the exudate stained blue with iodine and contributed to viscosity. Amylose also stains blue in unmodified starches and the hydrophilic nature of its polymer would contribute to viscosity. In addition to exudate shown in the wheat starch-water dispersion, a similar exudate is seen with heated corn starch - water dispersion.

Swelling power is a technic used to define changes in starch during heating of a dispersion. The contrast between an unheated granule at 30C and heated granule at 80C can be seen in this slide.

Enzymes do hydrolyze and isomerize starches. There are many common carbohydrases used in food preparation and food processing. One important enzyme to the starch industry that is not listed here is the fructose isomerase. One portion of the industry uses amylases to hydrolyze starch to glucose units and then isomerizes the glucose to the sweet fructose.

This sweet fructose is a FDA approved substitute for sucrose. As starch granules become more gelatinized they become increasingly susceptible to the action of amylases. This slide shows such a relationship.

Sedimentation of the granule also is related to gelatinization of the granule. This slide shows this relationship.

Viscosity is a property also used to define degree of gelatinization. Additionally, of course, this is an extremely important property in terms of food quality. The Brabender Visco/Amylo/Graph not only permits the recording of the viscosity of a heated starch-water dispersion but permits the charting of changes in viscosity over a controlled temperature rise. That is, the Brabender amylograph will heat and cool a starch-water dispersion 1.5C/minute until it reaches the programmed endpoint temperature. It records the increased viscosity required to stir the heating dispersion on a graph, such as seen in this slide. Of course, different starches have different viscosities requiring different forces and yields different graphs.

A number of factors do influence the viscosity, and that other important property, gel strength, as well as that of gelatinization. Heating rate will influence these two properties - viscosity and gel strength. When starch is heated at 100C versus 200C the heating rate differs in the two starch-water dispersions heated at 100 versus 200C. As expected, that starch-water dispersion heated at 200C has a steeper curve than that heated at 100C. Interestingly, dispersions of wheat starch appears to heat faster than corn starch. Interestingly, wheat starch-water dispersions are less viscous than those made with corn starch.

In comparing two corn starch-water dispersions heated to 85C at 100C, or 200C the slower - heated, starch appears to have more exudate and granule deformation. Although some exudate and deformation is present in the samples heated rapidly, the granules appear to have more tearing and fragmentation. Additionally, the exudate appears to be less uniformly exuded from granules. Similar results are shown in the lower portion of the slide with the wheat starch. Again, the rapidly heated wheat starch - water dispersion granules were more fragmented, concaved and deformed with some filamentous materials. Results shown in this slide indicate the need for a considerable more investigation.

There are two primary objective simple procedures of evaluating gel strength and viscosity. In addition to determining viscosity by Brabender Visco/Amylo/Graph, a crude technic of the linespread test may be used or other processes such as the Brookfield viscometer. Gel strength may be determined with the penetrometer, as shown here, or the percent sag test. With both viscosity and gel strength one is concerned with both gelatinization and retrogradation, respectively.

Retrogradation is due to realignment of the glucose polymers, primarily amylose. It may show up physically by a decrease in starch solubility and an increase in opaqueness. Retrogradation, once it is initiated after removal of a gelatinized starch-water dispersion from the heat, may form a semirigid structure at room temperature. This link diagrams the

organized raw starch granule structure to the organized starch gel. Of course, the intermediary disorganized starch granule during gelatinization is not shown. This disorganized gelatinized structure can be seen in this slide.

The degree of disorganization is dependent upon partially upon the cooking process. Differentiating between gelation and viscosity is somewhat difficult. This is especially true with conventional versus autoclaved dispersions.

Graphs from the amylograph shows the stirring or shearing action influences viscosity. This complicates the differentiation between those two properties viscosity and gelation. In order to form a gel and have gelation occur a number of variables must be controlled. Temperature is one of these variables. If we cool the starch too fast, such as in a freezer, we are going to get a very loose type of alignment of the amylose and amylopectin resulting in a weak gel. If we cool too slowly there will be considerable alignment and again a poor gel with a lot of syneresis. This [link](#) shows a scanning electron micrograph of a gelled starch dispersion with possible interaction shown.

To reiterate, this slide shows a five percent corn starch - water dispersion heated to 90C. If the dispersion is frozen and defrosted we may get a starch-water dispersion such as shown in this slide. It is well documented that freezing of gelatinized starch-water dispersions will cause a change in quality. This [slide](#) shows the effect of the freeze-thaw cycle on one quality parameter-syneresis. Different native and modified starches show differences in stability.

In the expanding market for frozen entrees, we are concerned with both the freeze-thaw stability and the effect of reheating stresses. The next three show scanning electron micrographs of a frozen and waterbath reheated 10% wheat starch. As you note there are pocked-marked structures. This pockedmark or honeycomb arrangement may be due to gelation of the starch dispersion during freezing. These three views of the identical starch dispersion indicates one of the problems of scanning electron micrograph interpretation. Many micrographs must be viewed before making general statements.

The effect of freezing and reheating of a corn starch-water dispersion may be viewed in SEMs. Again, one can observe the honeycomb appearance. In comparing that dispersion frozen and reheated in a microwave oven versus that reheated in a waterbath a difference can be seen. The tighter more crystalline appearance of the microwave as compared to the waterbath may be due to the time-temperature relationship and partial reversal of retrogradation.

Not only the effect of variety, but the influence of both temperature of gelatinization and interaction of added ingredients or granule structure during preparation, freezing and reheating, high quality, frozen, starch-containing prepared foods can be developed from both native and modified starches. Two starches in a simple system which are also used in a cream of cheese soup concentrate. The Purity VV granules are similar to the raw granules. Purity W granules generally appear to be round with a variety of sizes; whereas the wheat flour granules shown in the lower left-hand corner are disk-shaped or small and round. When the modified cross-linked, Purity 14 was added to 83C redistilled water considerable swelling took place. Also note the exudate which maybe amylose. Although not as pronounced, similar results with the starch granules occurred when the wheat flour was added to the 83C redistilled water. Upon holding for 15 minutes, the wheat flour dispersion has a much greater deformation and loss of granule integrity. This next slide shows the effect of processing on a cream of cheese soup. At an intermediary step in processing you see, in the Upper left hand corner, a definite granule structure with very few damaged granules. Both large and small granules are present. The large-disc shaped granules are probably wheat starch granules from the flour and the small either the small, round or oval wheat starch granules are either the small, oval wheat granules and/or cross-linked waxy maize from Purity 1W. As you see, with further processing and freezing and reheating it is increasingly difficult to distinguish the granule structure as there is greater deformation. These scanning electron micrograph results can be related to sensory scores. Notice in this Table how there is more syneresis, a thinner runnier soup, and poorer over all and texture acceptability with freezing and reheating. In order to assure optimum quality for frozen entrees it is apparent more work must be done.

It is apparent to all those who work with foods that each one of the starches shown in the SEMs here has its own characteristics, stability, and contribution to the foods overall properties. For example, translucency will vary for different starches. These starches are frequently used in pie fillings and thus, translucency may be an important characteristic.

Many ingredients will influence the properties of a heated starch-water dispersion. Some of the primary ingredients used in foods that influence the ultimate paste viscosity and gel strength are: acids, sugar, fat, eggs and milk. Generally, these ingredients affect the two properties by either their effect upon the gelatinization of the granule or their disruption or hydrolysis of the glucose polymers amylose and amylopectins. In a complex food system both influences may occur.

In a discussion of the effects of fats on the swelling of starch granules and the resulting viscosity changes, a distinction must be made between fats, emulsifying agents and free fatty acids. In looking at the next three slides we see that there appears to be an inhibition of swelling. This decrease in swelling can bring about a lowered viscosity and decreased gel strength. Fats without emulsifying agents and free fatty acids neither increased or decreased the maximum viscosity that was obtained when mixtures were heated in the Brabender Visco/Amylo/Graph; however, all had the same effect in lowering the temperature at which the maximum viscosity was reached. If monoglycerides, diglycerides or free fatty acids are added there does appear to be a complexing on the granule surface and decreased viscosity and gel strength.

Fat is not only found as an added ingredient for white sauces and gravies, but, it may also be found in the chocolate for chocolate pudding. A more subtle role of fat would possibly be its influence on starch in a number of baked products.

In evaluating the effect of a number of ingredients upon gelatinization and gelation of starch we can describe differences in a variety of puddings. We know these are not only influenced by the presence or absence of fat, but also by salts, sugars, milk and its components and acids.

This table shows the influence of a variety of sodium salts on the amylograms of starch dispersions. The higher the values, the more viscous the dispersion. At the present time, in most foods, the concentration of the salt in the food is likely so low that their effect is probably not as great as the other ingredients in the food. However, as can be seen from the table, their effect can not be ignored.

Sugars impede the swelling of the starch granule. As can be seen in this graph, different sugars have different influences. The sugar is apparently competing with starch for the water. The retardation of the swelling and extension in the gelatinization range may result in both decreased viscosity and gel strength. If as much as 50% sucrose is added to a dispersion no gel will actually form, a 10% addition weakens the gel. Note from the graph that sucrose and lactose, two disaccharides, appear to have a greater influence than the monosaccharides.

Lactose is found in milk. It is thought the protein constituent of milk and other ingredients also affect the starch properties in some way.

Dextrinization of starch may occur in food items due to either enzyme, heat or acid/alkali stress. Dextrinization is the hydrolysis of the long polymer of glucose residues into shorter chain lengths generally resulting in decreased viscosity and gel strength. Although enzyme dextrinization may occur in the preparation of yeast products, acid and heat dextrinization are more common. The classic example often cited for acid dextrinization is that which occurs in a lemon pie filling. In order to minimize syneresis or souppiness due to dextrinization, the juice is often added at the latter cooking phase. Dextrinization of a starch dispersion below pH 2.5 and above pH 10 will usually occur. It is generally a lesser problem in the pH 4.0 to pH 7.0 range.

Updated: Friday, May 26, 2006.

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Atty. Docket No. ADV12 P-305D

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit : 1761
Examiner : Kelly J. Mahafkey
Applicants : Cheree L. B. Stevens et al.
Appln. No. : 10/629,991
Filing Date : July 30, 2003
Confirmation No. : 3726
For : EXTERNAL COATING COMPOSITION FOR TOASTER
PASTRIES AND OTHER PASTRY PRODUCTS

DECLARATION OF CHEREE L. B. STEVENS

I, Cheree L. B. Stevens, do hereby declare as follows:

1. I am the Director of Technical Services for Advanced Food Technologies, assignee of the present patent application. I graduated from the College of Bakery & Food Technology at South Glamorgan Institute with a Food Technology Degree. I have had over 20 years experience in the food science industry. I have had extensive experience specifically in the food coatings area for over 14 years, since 1992.

2. From 1984 to 1986, I was the Production Supervisor for W. L. Miller's & Sons, where I managed employees in the production of bacon and ham and reduced pack weight problems through controls developed for the cook process. From 1986 to 1989, I was the Product Development Technologist for Reckitt and Colman, where I formulated twelve varieties of soft drinks using three different packaging technologies that created at least \$5 million in profit. I also developed matches to competitor products increasing market share and conducted supplier quality audits. From 1989 to 1991, I was the Senior Research Scientist for British Sugar Corporation, where I developed a soluble fiber-enriched soft drink and soluble fiber enriched meat additive using beet fiber. I also developed a novel food product using 'horizon' technology, initiated government petition for acceptance, commissioned a new manufacturing

facility that ran above efficiency and utilized total quality management (TQM) and team dynamics to ensure project probability. From 1992 to 1994, I was a Food Scientist for McCain Foods, Inc., where I developed various products, including a French fry that holds over 20 minutes under a heat lamp. I also assisted in launching a specialized coated French fry line resulting in \$200 million of additional sales, commercialized a signature French fry line resulting in \$30 million sales, commercialized the first flavored marinade French fry line valued at \$10 million and obtained patent protection, and developed specification and other procedures to obtain product launches. From 1994 to 1998, I was the Product Process Specialist for the Pillsbury Company, where I was responsible for ensuring process and packaging parameters. Among other responsibilities, I also implemented SPC for granule processing and packaging resulting in a 90% reduction in off-grade and reducing overweight pouches, developed Allergen control program, created SOP's for process and packaging operators, and audited BOMs and GMPs for accuracy. From 1998 to 1999, I was the Manager of Technical Services for Basic American Foods, where I managed the Plant Sanitarian, the Quality Assurance Lab Supervisor, 11 technicians and 6 sanitation personnel for potato dehydration, blending and packaging operation. I was also responsible for all Quality Assurance, developing the "Best Practices" identified by Pillsbury and Tricon audits, received Supplier of the Year awards, and developed Corrective Action system.

3. From 1999 to date, I have served as the Director of Technical Services for Advanced Food Technologies, Inc. A copy of my resume is attached hereto as Exhibit A.

4. I am one of the named inventors on United States Patent Application Serial Number 10/629,991.

5. I have reviewed the Office Action mailed October 20, 2006, in U.S. Patent Application Serial No. 10/629,991. I have also carefully reviewed United States Patent No. 4,504,502 to Earle et al. ("the '502 patent"), which is a reference cited therein.

6. Based on my knowledge, the coating composition disclosed in the '502 patent does not disclose a "substantially clear coating composition." The '502 patent essentially discloses a two-stage process to form a film on a food product. The first stage, as discussed in column 4, is to apply an algin solution that may contain an edible filler and/or carrier material. Algin is a hydrocolloid compound that will not form a film without the addition of calcium. This fact is further evidenced by the '502 patent itself, which requires a gelling agent to be added. The specific gelling agents listed are, in fact, calcium ion containing compounds, in particular, calcium chloride and calcium lactate. (See '502 patent, column 4 lines 42-45). Both calcium chloride and calcium lactate when mixed with water are cloudy. These calcium compounds also have very low solubility.

7. Additionally, based on my knowledge, the '502 patent at column 4 line 16 discloses using an "edible filler," which will further impede the solubility of the calcium ion compounds. Furthermore, because the calcium components are applied as a component of a dry gelling mixture (see '502 patent, column 4 lines 46-48), they will be even less likely to dissolve and will be visible in the final coating. For at least the above reasons, the calcium components of the '502 patent, which are necessary to form a film, will make the film visible on the food substrate.

8. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

March 20, 2007
Date

Cheree L. B. Stevens
Cheree L. B. Stevens

EXHIBIT A

CHEREE L. B. STEVENS**200 Cobblestone Lane • Idaho Falls, Idaho 83404 • (208) 529-9027****OBJECTIVE****Management position in food-related quality and R&D****PROFESSIONAL SUMMARY**

Manager with 15 years of Quality, R&D and Operations management experience. Demonstrated ability to structure innovative and unique solutions to complex problems. Proven ability to develop quality teams that motivate others to their peak performance and reduce execution time.

CAREER HISTORY**BASIC AMERICAN FOODS****1998 – 1999**

Shelly, Idaho

MANAGER, TECHNICAL SERVICES

- Managed Plant Sanitarian, QA Lab Supervisor and 11 technicians, 6 sanitation personnel for a 7 day 24 hour potato dehydration, blending and packaging operation. (8 flake drums, 4 granule lines, slice line, agglomerate line, 9 packaging lines)
- Responsible for all Quality Assurance issues including:
 - Customer required quality systems (Pillsbury, Tricon, Sysco)
 - Food Safety, Allergens, HACCP, GMP's, Continuous Improvement, SPC, Sanitation
 - Third party audits, including Kosher certification
- Developed "Best Practices" identified by Pillsbury and Tricon audits, received Supplier of the Year awards.
- Developed Corrective Action system

THE PILLSBURY COMPANY**1994 – 1998**

Shelly, Idaho

PRODUCT PROCESS SPECIALIST

- Responsible for ensuring process and packaging parameters met specified limits.
- Implemented SPC for granule processes resulting in a 90% reduction in off-grade
- Implemented SPC for granule packaging lines reducing over weight pouches
- Developed Allergen control program
- Created SOP's for Process and Packaging Operators, trained operators and QA techs
- Communicated Quality and Production data to management and hourly employees. Consistently met business goals relating to quality, cost and safety
- Audited BOMs for accuracy
- Conducted GMP audits, responsible for corrective actions
- Member of Granule HACCP Team, Product Recall Team (conducted mock recalls quarterly)
- Reduced costs in several areas including ingredient usage, off-grade reduction, reformulations, labor
- Created quality programs to meet customer required quality systems.

McCAIN FOODS, INC.**1992 – 1994**

Frozen Foods Division -- Othello Washington

FOOD SCIENTIST

- Developed a 1-minute French fry that holds over 20 minutes under heat lamp.
- Assisted in launching a specialized coated French fry line, resulting in 200MM additional sales pounds.
- Commercialized signature French fry line, resulting in \$30,000,000 sales.
- Commercialized first flavored marinade French fry line valued at \$10,000,000, obtaining patent.
- Developed specifications, nutrition, process procedures, and analytical testing to obtain product launches

CHEREE L.B. STEVENS**BRITISH SUGAR CORPORATION**

1989 – 1991

Sugar Products Division – Norwich, England

SENIOR RESEARCH SCIENTIST

- Developed a soluble fiber-enriched soft drink and soluble fiber enriched meat additive using beet fiber.
- Developed a novel food product using "horizon" technology and initiated government petition for acceptance.
- Commissioned a new manufacturing facility and ran at above efficiency.
- Utilized TQM, and team dynamics to ensure project probability.

RECKITT AND COLMAN

1986 – 1989

Colman's of Norwich, Norwich, England

PRODUCT DEVELOPMENT TECHNOLOGIST

- Formulated 12 varieties of soft drinks using three different packaging technologies, \$5MM profit
- Developed matches to competitor products, increased market share
- Conducted Supplier Quality audits

W.L. MILLER'S & SONS

1984 – 1986

Meat Products Division – Poole, England

PRODUCTION SUPERVISOR

- Managed 10 hourly employees in the production of bacon and ham
- Reduced pack weight problems through controls developed for the cook process.

EDUCATION

South Glamorgan Institute
The College of Bakery & Food Technology

Higher National Diploma
(Food Technology)

REFERENCES FURNISHED UPON REQUEST